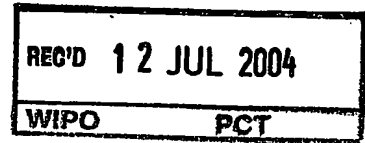




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Shmuel Poliner
18 Haavoda St., Hadera

Moshe Berger
23 Tyomkin St., Hadera

חוק הפטנטים, תשכ"ז - 1967
PATENT LAW, 5727 - 1967

ב ק ש ה ל פ ט נ ט
Application For Patent

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מערכת אינטראקטיבית ממוכנת לחלוקת חפצים



(בעברית)
(Hebrew)

INTERACTIVE AUTOMATED ARTICLE DISPENSING SYSTEM

(באנגלית)
(English)

hereby apply for a patent to be granted to me in respect thereof

מבקש בואח כי ינתן לי עליה פטנט

- בקשת חלוקה - Application of Division מבקשת פטנט from Application No. dated P.O.A.: general/individual-attached/to be filed later- הוגש בענין DR. MARK FRIEDMAN LTD BEIT SAMUELOFF 7HAOMANIM STREET 67897TEL AVIV		- בקשת פטנט מוסף - Application for Patent Addition לבקשה/לפטנט to Patent/Appl No. dated המען למסירת מכתבים בישראל Address for service in Israel		• דרישת דין קדימה Priority Claim מספר/סימן Number/Mark תאריך Date מדינת האיגוד Convention Country		
						
חתימת המבקש Signature of Applicant 		היום 25 בחודש Mar שנת 2003 This of the year of		לשימוש הלשכה For Office Use		

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מערכת אינטראקטיבית ממוכנת לחלוקת חפצים

INTERACTIVE AUTOMATED ARTICLE DISPENSING SYSTEM

Interactive Automated Article Dispensing System

FIELD AND BACKGROUND OF THE INVENTION

The present invention relates to methods and devices for dispensing or vending of articles and, in particular, it concerns an interactive automated
5 system for dispensing hospital scrub outfits.

In order to overcome the problems associated with manual unsupervised distribution of scrub outfits, hospitals have, in recent years, turned to automated scrub outfit dispensing devices.

One attempt to overcome these problems have been suggested by
10 Fitzgerald et al. in U.S. Patents Nos. 5,638,985, for a dispensing device, and 5,713,270 and 5,829,349, for an item return cabinet. The dispenser of Fitzgerald et al. ('985) consists of a plurality of slots arranged in rows. Each row with it's own access door, opening of which allows access to a full slot in the row. Each of the slots in a given row being accessible through multiple
15 openings of the access door. One problem with the device of Fitzgerald et al. ('985) is the time required to stock the device with clean scrub outfits for dispensing, in that each of the slots must be manually filled. The embodiment of Figure 1 illustrates a device with eight rows each containing more the twenty slots. That means that more than one hundred sixty slots must be individually
20 filled.

A further attempt to overcome some of the problems associated with inventory control of hospital scrub outfits is disclosed in U.S. Patent No.

6,223,934 to Shoenfeld. This device includes two belts, each with a plurality of pockets configured to hold articles. Each of the pockets of one of belt is filled with a scrub outfit top and each of the pockets of the second belt is filled with a scrub outfit bottom. A complex algorithm is used to determine the placements
5 of different sized scrub outfits along the length of each of the belts. Here too, stocking requires that each pocket be individually filled. Once deployed in the device, the belts are wound and/or rewound to a pocket containing the desired size scrub outfit article, either top or bottom. Shoenfeld openly discusses the possibility of overloading one of the roller drums, thereby creating a situation
10 where a desired article may actually be in the device, but not accessible for dispensing to the customer.

While both Fitzgerald et al. and Shoenfeld disclose the ability to communicate to the customer that the order can not be filled, and possibly the reason, neither Fitzgerald et al. nor Shoenfeld discloses the ability to inform the
15 customer as to an alternative means by which the order may be filled.

There is therefore a need for an interactive automated system for dispensing hospital scrub outfits that provides for ease of stocking and interactivity with the customer so as to provide order filling options.

SUMMARY OF THE INVENTION

20 The present invention is an interactive automated system for dispensing hospital scrub outfits.

According to the teachings of the present invention there is provided, an interactive automated dispensing system for fulfilling an order from a customer, the system comprising: (a) a housing cabinet; (b) at least one article storage compartment deployed within the housing cabinet; (c) at least one
5 article delivery system deployed within the housing cabinet; (d) a customer interface unit deployed on the housing cabinet so as to be accessible to the customer; and (e) an on-board processing unit deployed within the housing cabinet, the on-board processor being in data and electronic communication at least with the storage compartment, the article delivery system and the
10 customer interface unit, the on-board processing unit configured to determine if the customer order is fulfillable: (i) if yes, fulfill order; and (ii) if no, interactively communicate with the customer to provide an alternate solution.

According to a further teaching of the present invention, the customer interface includes: (a) a customer identification mechanism; (b) an input
15 device; and (c) an output device.

According to a further teaching of the present invention, the customer identification mechanism includes a device for at least reading at least one chosen from a list including: cards with magnetic strips, bar-codes, smartcards, voice recognition devices, and eye and finger print scanners.

20 According to a further teaching of the present invention, the input device includes numeric and alphanumeric keypads.

According to a further teaching of the present invention, the output device is chosen from a list including: LED displays; LCD displays; and monochrome and color monitors.

5 According to a further teaching of the present invention, the article is implemented as a variety of articles.

According to a further teaching of the present invention, the on-board processing unit is configured to maintain a database of the articles deployed within the storage compartments with which the on-board processing unit is in data communication, the database including any one or combination of
10 classifications taken from a list including: article type, style, size, and color; number of each the article available; location within the housing cabinet of each the variety of the articles (e.g. in which the storage compartment each of the articles is deployed).

According to a further teaching of the present invention, the on-board
15 processing unit is configured such that, upon receipt of the customer order and determination that the customer order is fulfillable, the on-board processing unit activates the article delivery system, and records such transaction in the database.

According to a further teaching of the present invention, the on-board
20 processing unit is configured such that, the interactive communication with the customer to provide an alternate solution includes at least one message including at least one optional order fulfillment solution, the at least one message delivered by the output device.

According to a further teaching of the present invention, there is also provided, a remote central processing unit in data communication with at least one the on-board processing unit deployed in at least one the housing cabinet, the central processing unit configured to at least maintain a database including
5 any one or combination of classifications taken from a list including: article type, style, size, and color; number of each the article available within the system; location within the system of the variety of the articles (e.g. inventory of each the at least one housing cabinet), and customer data, such as authorized number of articles, and number of authorized articles remaining in the system.

10 According to a further teaching of the present invention, the at least data communication between each the on-board processing unit and the remote central processing unit includes use of any one or combination of communication systems chosen from a list including telephone, cellular phone, internet, direct cable, cable system and satellite communication systems.

15 According to a further teaching of the present invention, the at least one housing cabinet is implemented as a plurality of the housing cabinets, each having a the on-board processing unit in at least data communication with the remote central processing unit.

20 According to a further teaching of the present invention, there is also provided, an article return device configured so as to identify the customer, receive a returned article and record such transaction.

According to a further teaching of the present invention, the article return device includes at least a customer interface unit deployed on the

housing cabinet so as to be accessible to the customer; and a sensor configured so as to detect deposit of the returned article.

According to a further teaching of the present invention, the article return device is in data communication with the remote central processing unit,
5 so as to communicate the transaction.

There is also provided according to the teachings of the present invention, an interactive automated dispensing method for fulfilling an order from a customer, the method comprising: (a) providing a housing cabinet including: (i) at least one storage compartment configured for article storage;
10 (ii) at least one article delivery system; (iii) a customer interface unit accessible to the customer; and (iv) an on-board processing unit in data and electronic communication with the storage compartment, the dispensing mechanism, and the customer interface unit; and (b) processing the customer order by: (i) identifying the customer using the customer identification device; (ii)
15 determining, using the on-board processing unit, if the customer order can be fulfilled; (iii) if yes, fulfilling order; and (iv) if no, interactively communicate with the customer to provide an alternate solution.

According to a further teaching of the present invention, the customer interface is implemented with: (a) a customer identification mechanism;
20 an input device; and (b) an output device.

According to a further teaching of the present invention, the customer identification mechanism is implemented as a device for at least reading at least

one chosen from a list including: cards with magnetic strips, bar-codes, smartcards, voice recognition devices, and eye and finger print scanners.

According to a further teaching of the present invention, the input device is implemented as any one of numeric and alphanumeric keypads.

5 According to a further teaching of the present invention, the output device is implemented as a device chosen from a list including: LED displays; LCD displays; and monochrome and color monitors.

According to a further teaching of the present invention, the article is implemented as a variety of articles.

10 According to a further teaching of the present invention, configuration of the on-board processing unit includes maintenance of a database of the articles deployed within the storage compartments with which the on-board processing unit is in data communication, the database including any one or combination of classifications taken from a list including: article type, style,
15 size, and color; number of each the article available; location within the housing cabinet of each the variety of the articles (e.g. in which the storage compartment each of the articles is deployed).

20 According to a further teaching of the present invention, upon the determination that the customer order is fulfillable, activating the article delivery system, and recording such transaction in the database.

According to a further teaching of the present invention, the interactive communication with the customer to provide an alternate solution includes

presenting at least one message including at least one optional order fulfillment solution.

According to a further teaching of the present invention, the optional fulfillment solution includes offering a similar article, such as a choice between
5 one larger and one smaller.

According to a further teaching of the present invention, there is also provided, connecting to a remote central processing unit in data communication with at least one the on-board processing unit deployed in at least one the housing cabinet, the central processing unit configured to at least maintain a
10 database including any one or combination of classifications taken from a list including: article type, style, size, and color; number of each the article available within the method; location within the method of the variety of the articles (e.g. inventory of each the at least one housing cabinet), and customer data, such as authorized number of articles, and number of authorized articles
15 remaining in the method.

According to a further teaching of the present invention, the connecting to a remote central processing unit is accomplished by any one or combination of communication systems chosen from a list including telephone, cellular phone, internet, direct cable, cable system and satellite communication
20 systems.

According to a further teaching of the present invention, the at least one housing cabinet is implemented as a plurality of the housing cabinets, each

having a the on-board processing unit in at least data communication with the remote central processing unit.

According to a further teaching of the present invention, the optional fulfillment solution further includes an alternative housing cabinet within the system at which the order is fulfillable.

According to a further teaching of the present invention, there is also provided, receiving an article deposited in an article return device, the article return device configured so as to identify the customer, receive a returned article and record such transaction.

According to a further teaching of the present invention, the article return device is implemented with at least a customer interface unit deployed on the housing cabinet so as to be accessible to the customer; and a sensor configured so as to detect deposit of the returned article.

According to a further teaching of the present invention, there is also provided, the article return device being in data communication with the remote central processing unit, so as to communicate the transaction.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, by way of example only, with reference to the accompanying drawings, wherein:

FIG. 1 is an isometric view of a first preferred embodiment of an article dispensing device constructed and operative according to the teachings of the present invention;

FIG. 2 is a partial cut-away front elevation of the embodiment of FIG. 1;

FIG. 3 is a cut-away side elevation of the embodiment of FIG. 1;

FIG. 4 is a cut-away top elevation of the embodiment of FIG. 1;

FIG. 5 is an isometric view of a second preferred embodiment of an
5 article dispensing device constructed and operative according to the teachings
of the present invention;

FIG. 6 is a partial cut-away front elevation of the embodiment of FIG. 5;

FIG. 7 is a cut-away side elevation of the embodiment of FIG. 5;

FIG. 8 is a cut-away top elevation of the embodiment of FIG. 5;

10 FIG. 9 is a front elevation of an article return device constructed and
operative according to the teachings of the present invention; and

FIG. 10 is a cut-away side elevation of the device of FIG. 9.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is an interactive automated system for dispensing
15 hospital scrub outfits.

The principles and operation of an interactive automated system for
dispensing hospital scrub outfits according to the present invention may be
better understood with reference to the drawings and the accompanying
description.

20 By way of introduction, it should be noted that while the discussion
herein concerns an interactive automated system for dispensing hospital scrub
outfits, the principles of the present invention may be readily adapted for use in

systems for dispensing a wide variety of articles suitable for distribution by use of a vending style device, such as but not limited to clean room suits, towels, blankets, sweat suits, and rain suits. Further, it will be appreciated by one ordinarily skilled in the art that systems of the present invention will be of benefit to a variety of institutions and outlets, such as, but not limited to, hospitals, hotels, motels, resorts, health clubs, country clubs, swimming pools, college and university dormitories, factories, laboratories and the like. The general principles of the present invention include: providing an article dispensing device; receiving a customer order; ascertaining if the order may be fulfilled by the dispensing device at which such order was placed; if "yes", then fulfilling the order; and if "no" providing an alternative ordering solution based on the customer's requested order and information from a system wide database. The alternative ordering solutions may include an alternate article from the dispensing device at which the order is received, the location of an alternate dispensing device at which the desired article may be obtained, or a request that the customer return a used article to a return device (see below).

In the case of articles that are expected to be returned by the customer after use, such as, but not limited to, hospital scrub outfits, the system may further include an article return device.

Further, the present invention provides databases of inventory available within the system and, when applicable, customers authorized to use the system.

Two preferred non-limiting embodiments of the present invention discussed herein differ mainly in the configuration of the dispensing device employed. Therefore, the overall system will first be discussed as it relates to both embodiments, and the two dispensing devices will be discussed
5 individually with regard to Figures 1-4 and 5-8 respectively.

The system includes a plurality of dispensing devices, each of which includes an on-board processing unit for controlling the general operation of the individual dispensing device, and a remote central processing unit in data communication with each of the individual dispensing devices. The individual
10 dispensing devices within the system may be deployed throughout a hospital, on different floors and/or different wings, for example, and in a plurality of hospitals. It should be noted that communication between the remote central processing unit and each of the on-board processing units in the system may be through conventional telephone lines using a direct telephone link or internet
15 link, by direct cable connection, cable system hook-up, cellular telephone connection, a satellite communication system, or any combination thereof.

Each of the individual dispensing devices may be stocked with a variety of scrub outfits, such as, but not limited to, scrub top and scrub bottoms of varying sizes. The remote central processing unit database includes the
20 inventory available in each of the individual dispensing devices. the on-board processing unit of each of the individual dispensing devices includes the location of the inventory within that dispensing device (as will be discussed below).

The remote central processing unit may also contain a customer database that may include customer information such as, but not limited to, customer identification information, preferred customer order (e.g. size of scrub top and scrub bottom), number of authorized system transactions, number
5 of scrub outfits authorized out, and number of scrub outfits currently out.

To initiate an order, the customer first enters customer identification information into the on-board processing unit using the interactive customer interface unit. Preferably, this is accomplished by passing a machine-readable card, such as, but not limited to a card with a magnetic strip or bar-code,
10 through an appropriate card reader. It should be noted that the interactive customer interface may be configured to accept customer identification information entered using any known data input device, such as, but not limited to, voice recognition, eye or finger print scanners, smartcards, and passwords entered via a numeric or alpha-numeric keypad.

15 If the customer is entitled to place an order, the on-board processing unit sends the customer identification information to the remote central processes, which in turn determines if the customer is entitled to place an order. The results of this determination are then sent to the on-board processing unit, to be communicated to the customer by an output device. The output device may be,
20 by non-limiting example, in the form of a visual display, such as, but not limited to, an LCD display, an LED display or any conventional computer monitor, an audio speaker, any known printing device, configured to produce a

printed message that may be presented to the customer, and/or any combination of such devices.

If entitled, the customer may place an order using an input device such as, but not limited to, any known configuration of numeric or alphanumeric keypad. Alternatively, the remote central processing unit customer database may include a preferred order, which may be automatically entered into the on-board processing unit. The on-board processing unit checks in on-board inventory. If the ordered article is available, the article is delivered to the customer. Alternatively, the interactive customer interface may include a touch sensitive display that is used as both an input and an output device.

If the ordered article is not available, the on-board processing unit communicates such to the remote central processing unit, which in turn checks the system inventory database for, preferably the nearest, alternate dispensing device containing the ordered article. This information is then sent to the on-board processing unit. At this point, an interactive phase is entered, in which the system offers the customer alternate order fulfillment solutions, and the customer either accepts a solution or cancels the order.

In the interactive phase, the on-board processing unit uses database information to formulate any one or combination of alternate order fulfillment solutions that may include, by non-limiting example, offering to fulfill the order with a scrub outfit that is larger or smaller than that ordered, or offering the location of a, preferably nearby, alternate dispensing device that currently contains the ordered scrub outfit and which may fulfill the order.

Preferred embodiments of the present invention may further include an article return device, as illustrated in Figures 9 and 10. This non-limiting example includes an interactive customer interface unit 200 as described above, including a card reader 202. A laundry hamper 204 is place inside the device
5 cabinet 206 through cabinet door 208. The customer activates the article return device by entering customer identification information, here by passing a customer card through the card reader 202. Once activated, the article being returned is deposited through the article return door 210 and the deposition is sensed by sensor 212. The transaction is communicated to the remote central
10 processing unit and the customer database is updated to indicate the return of the article.

In a case where the customer is authorized to have, by non-limiting example, five scrub outfits out at any given time, and the customer database indicates the five scrub outfits are currently out, upon placing an order on the
15 scrub dispensing device, the interactive message may include instructions to first return at least one scrub outfit. Upon doing so, the customer database is updated and the new order may be fulfilled.

Additionally, either the system wide inventory database and/or the on-board inventory database may be used to determine the inventory needs of
20 individual dispensing devices, and place re-stock orders.

It will be appreciated by one ordinarily skilled in the art that a variety of alternative configurations of the present invention may be readily apparent. Non-limiting examples may include:

Physical or electronic interconnection of the dispensing and return devices, thereby utilizing a single interactive customer interface unit.

Use of customer cards whose information may be varied by the interactive customer interface unit, such as magnetic strip cards used in
5 conjunction with a magnetic reading and writing device, as are commonly known in the art, or the use of smartcards, and inclusion of a communication device for they use in the interactive customer interface unit. The use of such cards could lessen or eliminate the need for communication between the on-board processing unit and the remote central processing unit, in that each
10 customer card would card individual customer data that may be updated by each individual dispensing or article return device during each transaction.

Referring now to the drawings and preferred embodiments of article dispensing devices constructed and operative according to the teachings of the present invention, Figures 1-4 illustrate a first preferred embodiment with a
15 housing cabinet 2 with a central panel on which is located interactive customer interface unit 4 and associated article dispensing outlet 6. Located on each side of the central panel are storage compartment access doors. The opposite (unseen) side of the housing cabinet also includes a plurality of storage compartment doors.

20 A stack 20 of like sized scrub outfit parts, tops and bottoms, is deployed in each of the storage compartments 22. Each storage compartment is configured with an elevator system 24 operated by motor 26. The elevator system varies the height of the storage compartment floor 28, such that the

upper most article in the stack is in position for selection by one of the two selection mechanisms 30 and 30'. Alternatively, the height of the storage compartment floor may be varied by, as non-limiting examples, mechanical springs, pneumatic springs, hydraulic elevator systems, and/or any combination thereof.

Upon activation by the on-board processing unit, the appropriate selection mechanism 30 or 30' is moved along rail 36 by the associate motor 32 or 32' to a position in alignment with the appropriate storage compartment 22. The associated motor 34 or 34' rotates the selection mechanism so as to contact the upper most article in the stack. The selection mechanism then grasps the article and is rotated back into an upright position. The associated motor 32 or 32' is again activated to move the selection mechanism along rail 36 to alignment with the dispensing slide 38. Once aligned, the article is released and falls down the dispensing slide 38 to the dispensing outlet door 40.

Alternately, the panel in which the interactive customer interface unit and the dispensing outlet are deployed may be located at in place of any storage compartment along the length of the housing cabinet, or at either end of the housing cabinet, in which case a single selection mechanism may be employed.

Figures 5-8 illustrate a second preferred embodiment of the present invention with a housing cabinet 2' with a panel on which the interactive customer interface unit 4' and associated article dispensing outlet 40' are deployed replacing a storage compartment at the extreme right end of the housing cabinet.

Each storage compartment 50 is configured so as to position the bottom most article in the stack ready for ejection from the storage compartment 50 by the ejection rollers 52, which are activated by associated motor 54. Each storage compartment includes a variable height floor element 56 that rest on the upper most article in the stack, which is configured to apply downward pressure to the stack, thereby facilitating the ejection process. The downward pressure may be due to the weight of the floor itself. Alternatively, the downward pressure may be provided by, as non-limiting examples, mechanical springs, pneumatic springs, hydraulic elevator systems, and/or any combination thereof.

Upon activation by the on-board processing unit, the appropriate ejection rollers eject the ordered article onto a conveyor belt 58, which is activated by motor 60. The conveyor belt 58 in turn transports the article to the dispensing outlet 40'.

It should be noted the panel may alternately deployed so as to replace any storage compartment along the length of the housing cabinet, in which case a reversible conveyor belt may be employed.

It will be readily appreciated to one ordinarily skilled in the art that the storage compartments of the present invention, accessible through access doors provide level of ease of restocking not provided by the devices of prior art mentioned above, in that a number of articles may be simultaneously placed into a storage compartment. It should be noted that the storage compartments

of the present invention may be readily adapted for use with pre-loaded article cartridges, which would further expedite the re-stocking procedure.

It will be appreciated that the above descriptions are intended only to serve as examples, and that many other embodiments are possible within the
5 spirit and the scope of the present invention.

WHAT IS CLAIMED IS:

1. An interactive automated dispensing system for fulfilling an order from a customer, the system comprising:

- (i) a housing cabinet;
- (ii) at least one article storage compartment deployed within said housing cabinet;
- (iii) at least one article delivery system deployed within said housing cabinet;
- (iv) a customer interface unit deployed on said housing cabinet so as to be accessible to the customer; and
- (v) an on-board processing unit deployed within said housing cabinet, said on-board processor being in data and electronic communication at least with said storage compartment, said article delivery system and the customer interface unit, said on-board processing unit configured to determine if the customer order is fulfillable:
 - (x) if yes, fulfill order; and
 - (1) if no, interactively communicate with the customer to provide an alternate solution.

2. The system of claim 2, wherein said customer interface includes:

- (i) a customer identification mechanism;
- (ii) an input device; and

(iii) a output device.

3. The system of claim 2, wherein the customer identification mechanism includes a device for at least reading at least one chosen from a list including: cards with magnetic strips, bar-codes, smartcards, voice recognition devices, and eye and finger print scanners.

4. The system of claim 2, wherein said input device includes numeric and alphanumeric keypads.

5. The system of claim 2, wherein said output device is chosen from a list including: LED displays; LCD displays; and monochrome and color monitors.

6. The system of claim 2, wherein said article is implemented as a variety of articles.

7. The system of claim 6, wherein said on-board processing unit is configured to maintain a database of said articles deployed within said storage compartments with which said on-board processing unit is in data communication, said database including any one or combination of classifications taken from a list including: article type, style, size, and color; number of each said article available; location within said housing cabinet of

each said variety of said articles (e.g. in which said storage compartment each of said articles is deployed).

8. The system of claim 7, wherein said on-board processing unit is configured such that, upon receipt of the customer order and determination that the customer order is fulfillable, said on-board processing unit activates said article delivery system, and records such transaction in said database.

9. The system of claim 8, wherein said on-board processing unit is configured such that, said interactive communication with the customer to provide an alternate solution includes at least one message including at least one optional order fulfillment solution, said at least one message delivered by said output device.

10. The system of claim 2, further including a remote central processing unit in data communication with at least one said on-board processing unit deployed in at least one said housing cabinet, said central processing unit configured to at least maintain a database including any one or combination of classifications taken from a list including: article type, style, size, and color; number of each said article available within the system; location within the system of said variety of said articles (e.g. inventory of each said at least one housing cabinet), and customer data, such as authorized number of articles, and number of authorized articles remaining in the system.

11. The system of claim 10, wherein said at least data communication between each said on-board processing unit and said remote central processing unit includes use of any one or combination of communication systems chosen from a list including telephone, cellular phone, internet, direct cable, cable system and satellite communication systems.

12. The system of claim 11, wherein said at least one housing cabinet is implemented as a plurality of said housing cabinets, each having a said on-board processing unit in at least data communication with said remote central processing unit.

13. The system of claim 1, further comprising an article return device configured so as to identify the customer, receive a returned article and record such transaction.

14. The system of claim 13, wherein said article return device includes at least a customer interface unit deployed on said housing cabinet so as to be accessible to the customer; and a sensor configured so as to detect deposit of said returned article.

15. The system of claim 14, wherein said article return device is in data communication with said remote central processing unit, so as to communicate said transaction.

16. An interactive automated dispensing method for fulfilling an order from a customer, the method comprising:

- (i) providing a housing cabinet including:
 - (N) at least one storage compartment configured for article storage;
 - (1) at least one article delivery system;
 - (1) a customer interface unit accessible to the customer; and
 - (T) an on-board processing unit in data and electronic communication with said storage compartment, said dispensing mechanism, and the customer interface unit; and
- (ii) processing the customer order by:
 - (N) identifying the customer using said customer identification device;
 - (1) determining, using said on-board processing unit, if the customer order can be fulfilled;
 - (1) if yes, fulfilling order; and
 - (T) if no, interactively communicate with the customer to provide an alternate solution.

17. The method of claim 16, wherein said customer interface is implemented with:

- (i) a customer identification mechanism;

- (ii) an input device; and
- (iii) an output device.

18. The method of claim 17, wherein the customer identification mechanism is implemented as a device for at least reading at least one chosen from a list including: cards with magnetic strips, bar-codes, smartcards, voice recognition devices, and eye and finger print scanners.

19. The method of claim 17, wherein said input device is implemented as any one of numeric and alphanumeric keypads.

20. The method of claim 17, wherein said output device is implemented as a device chosen from a list including: LED displays; LCD displays; and monochrome and color monitors.

21. The method of claim 17, wherein said article is implemented as a variety of articles.

22. The method of claim 21, wherein configuration of said on-board processing unit includes maintenance of a database of said articles deployed within said storage compartments with which said on-board processing unit is in data communication, said database including any one or combination of classifications taken from a list including: article type, style, size, and color; number of each said article available; location within said housing cabinet of

each said variety of said articles (e.g. in which said storage compartment each of said articles is deployed).

23. The method of claim 22, wherein upon said determination that the customer order is fulfillable, activating said article delivery system, and recording such transaction in said database.

24. The method of claim 23, wherein said interactive communication with the customer to provide an alternate solution includes presenting at least one message including at least one optional order fulfillment solution.

25. The method of claim 24, wherein said optional fulfillment solution includes offering a similar article, such as a choice between one larger and one smaller.

26. The method of claim 25, further comprising connecting to a remote central processing unit in data communication with at least one said on-board processing unit deployed in at least one said housing cabinet, said central processing unit configured to at least maintain a database including any one or combination of classifications taken from a list including: article type, style, size, and color; number of each said article available within the method; location within the method of said variety of said articles (e.g. inventory of each said at least one housing cabinet), and customer data, such as authorized number of articles, and number of authorized articles remaining in the method.

27. The method of claim 26, wherein said connecting to a remote central processing unit is accomplished by any one or combination of communication systems chosen from a list including telephone, cellular phone, internet, direct cable, cable system and satellite communication systems.

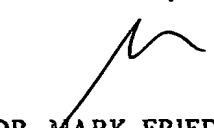
28. The method of claim 27, wherein said at least one housing cabinet is implemented as a plurality of said housing cabinets, each having a said on-board processing unit in at least data communication with said remote central processing unit.

29. The method of claim 28, wherein said optional fulfillment solution further includes an alternative housing cabinet within the system at which the order is fulfillable.

30. The method of claim 27, further comprising receiving an article deposited in an article return device, said article return device configured so as to identify the customer, receive a returned article and record such transaction.

31. The method of claim 30, wherein said article return device is implemented with at least a customer interface unit deployed on said housing cabinet so as to be accessible to the customer; and a sensor configured so as to detect deposit of said returned article.

32. The system of claim 31, further including said article return device being in data communication with said remote central processing unit, so as to communicate said transaction.



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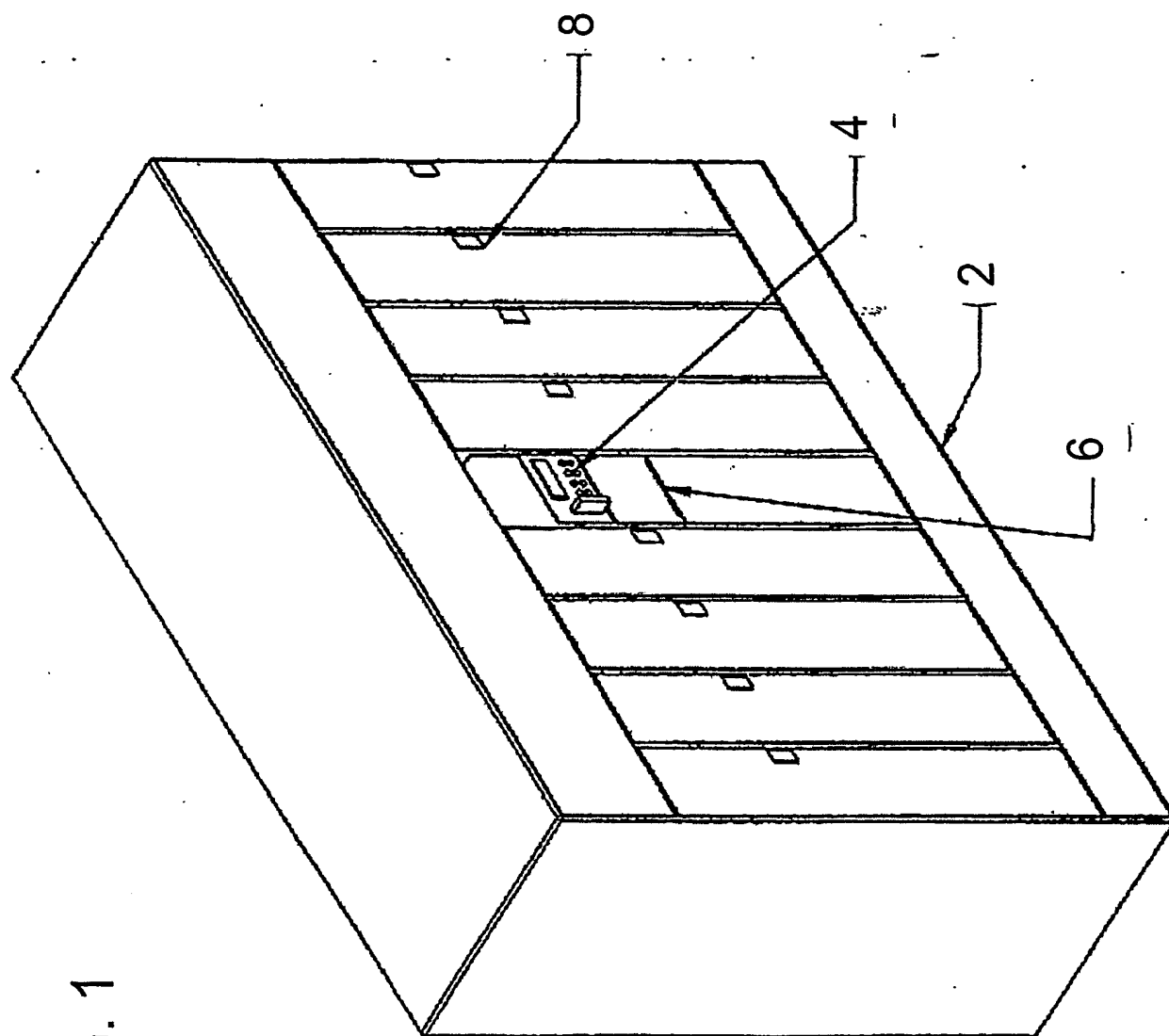


FIG. 1

FIG. 2

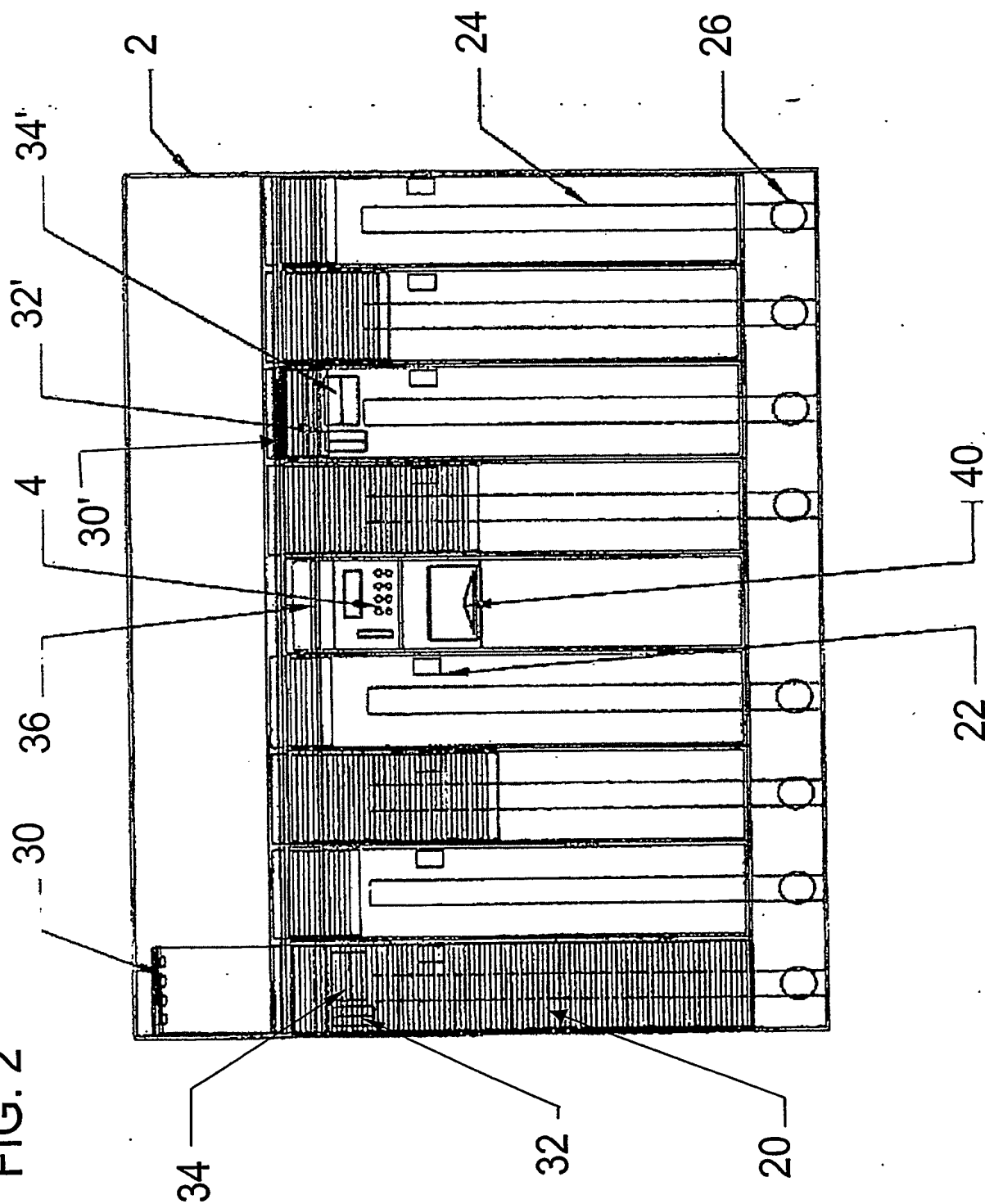


FIG. 3

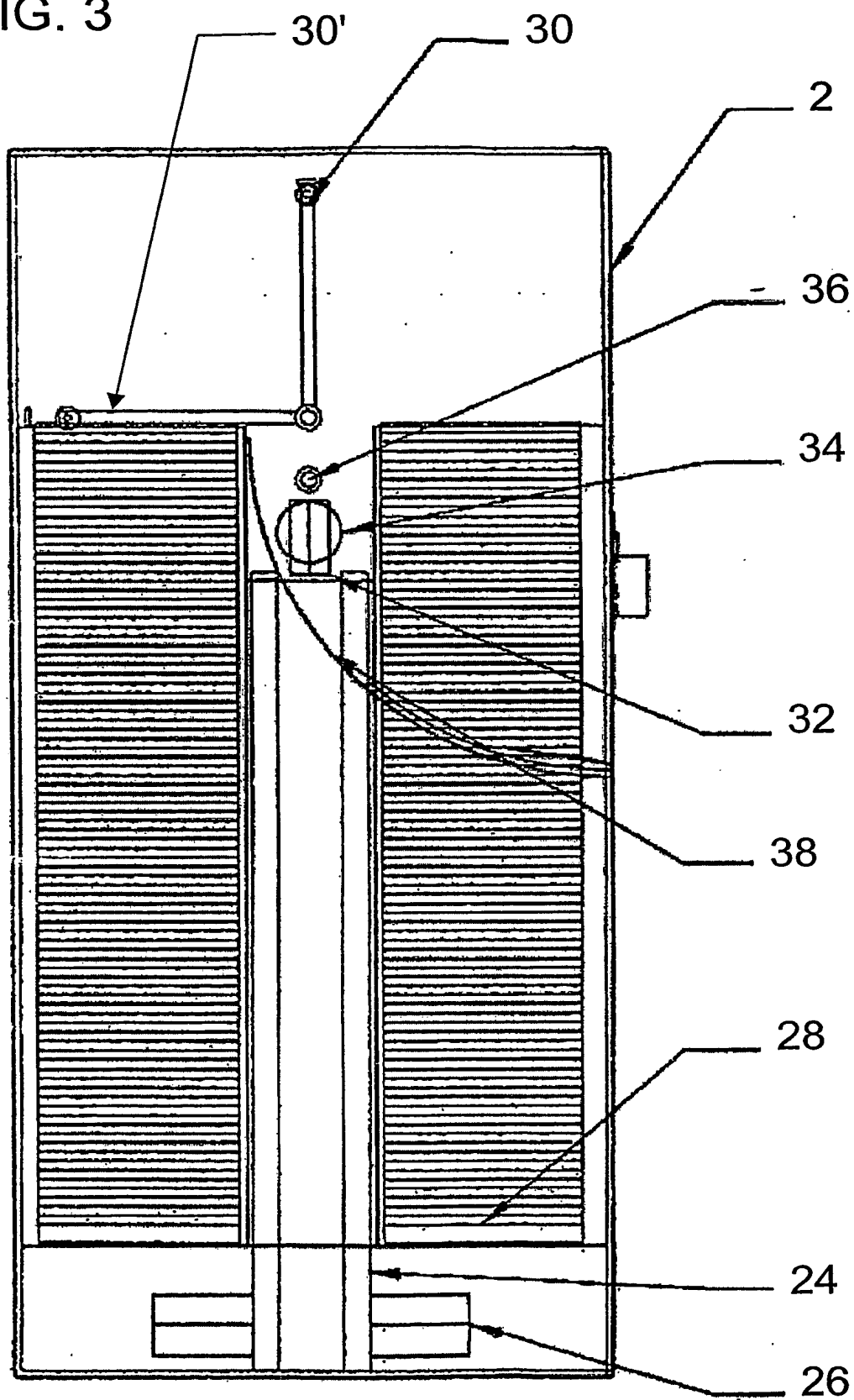
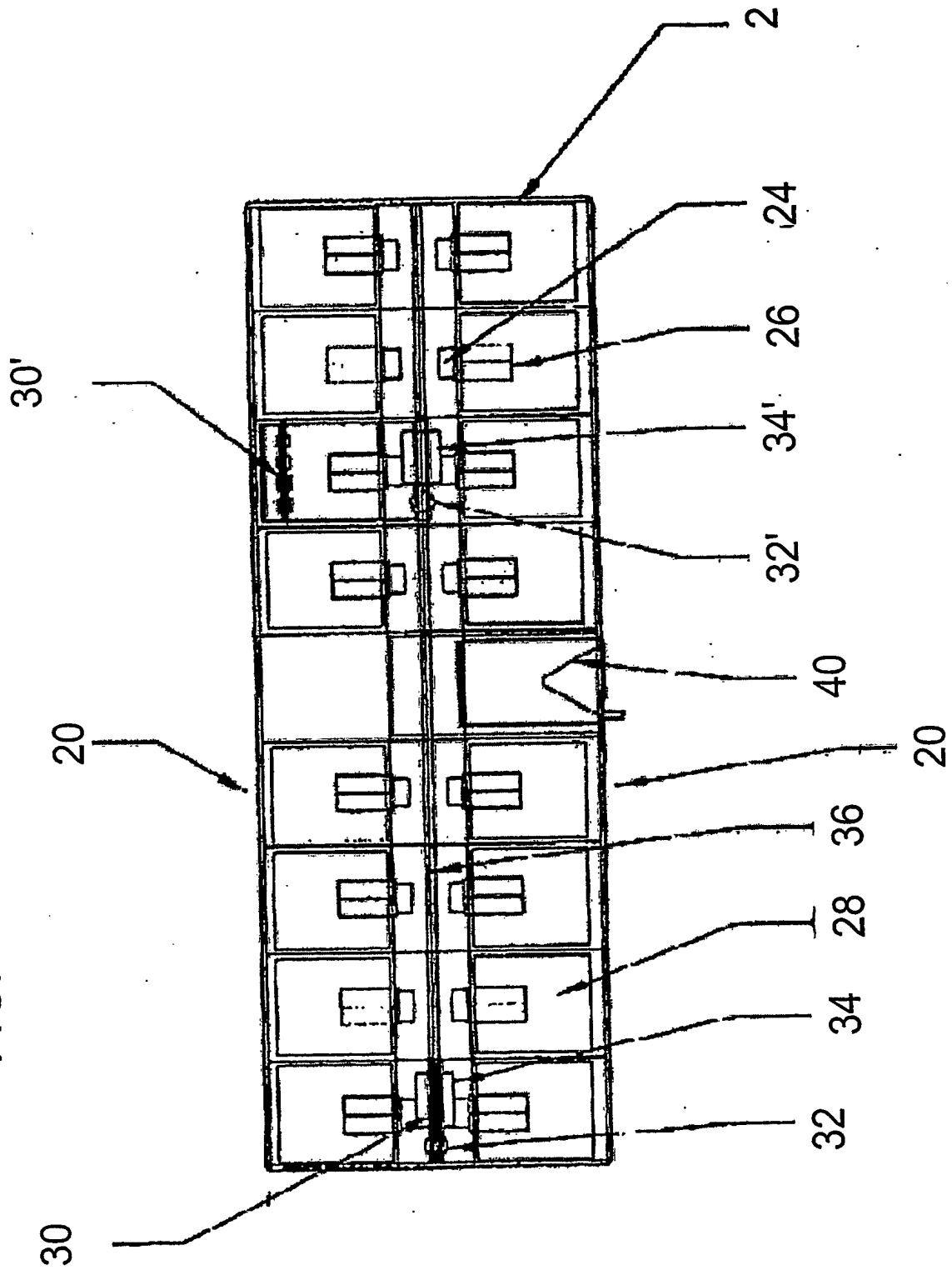


FIG. 4



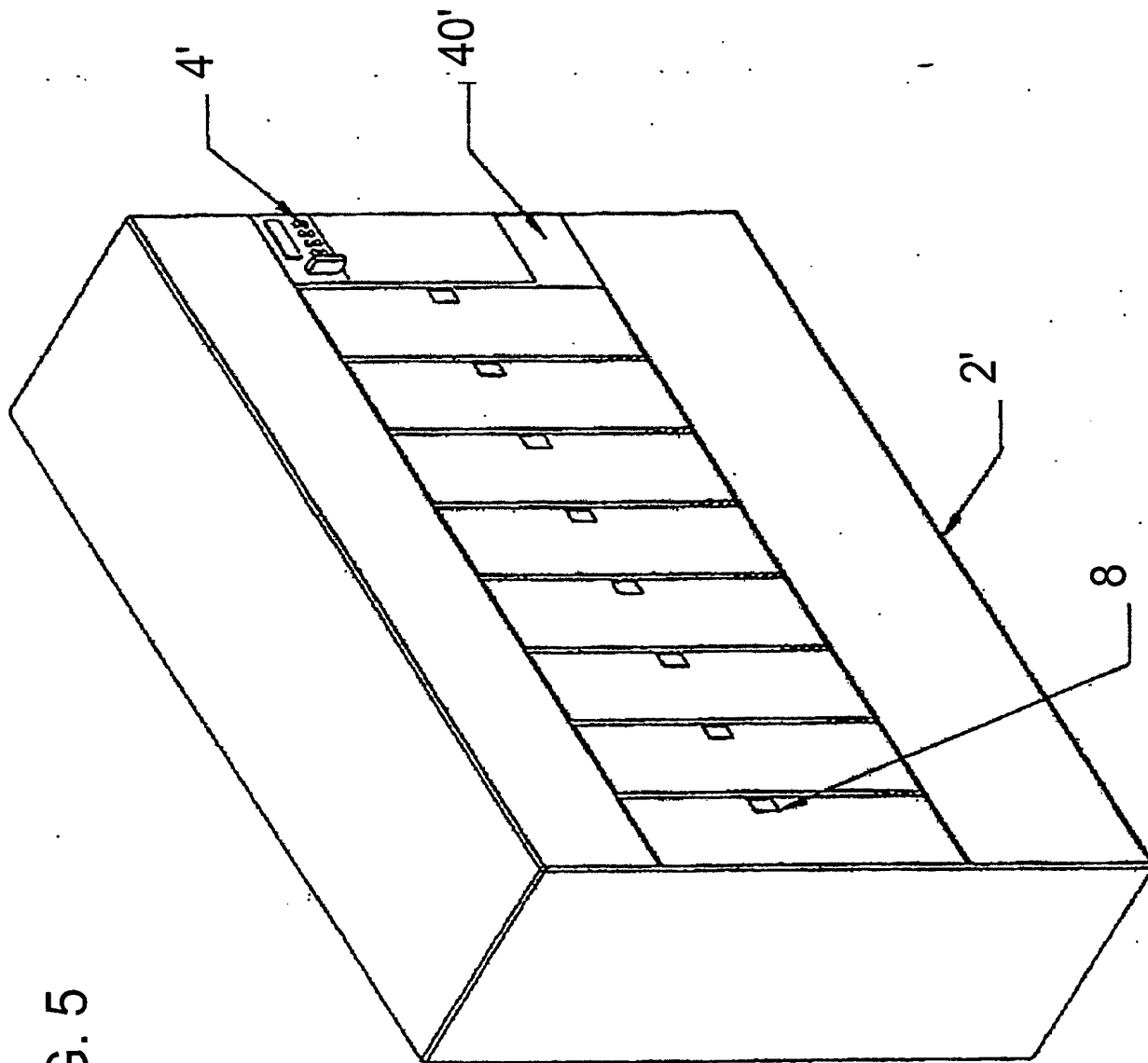


FIG. 5

FIG. 6

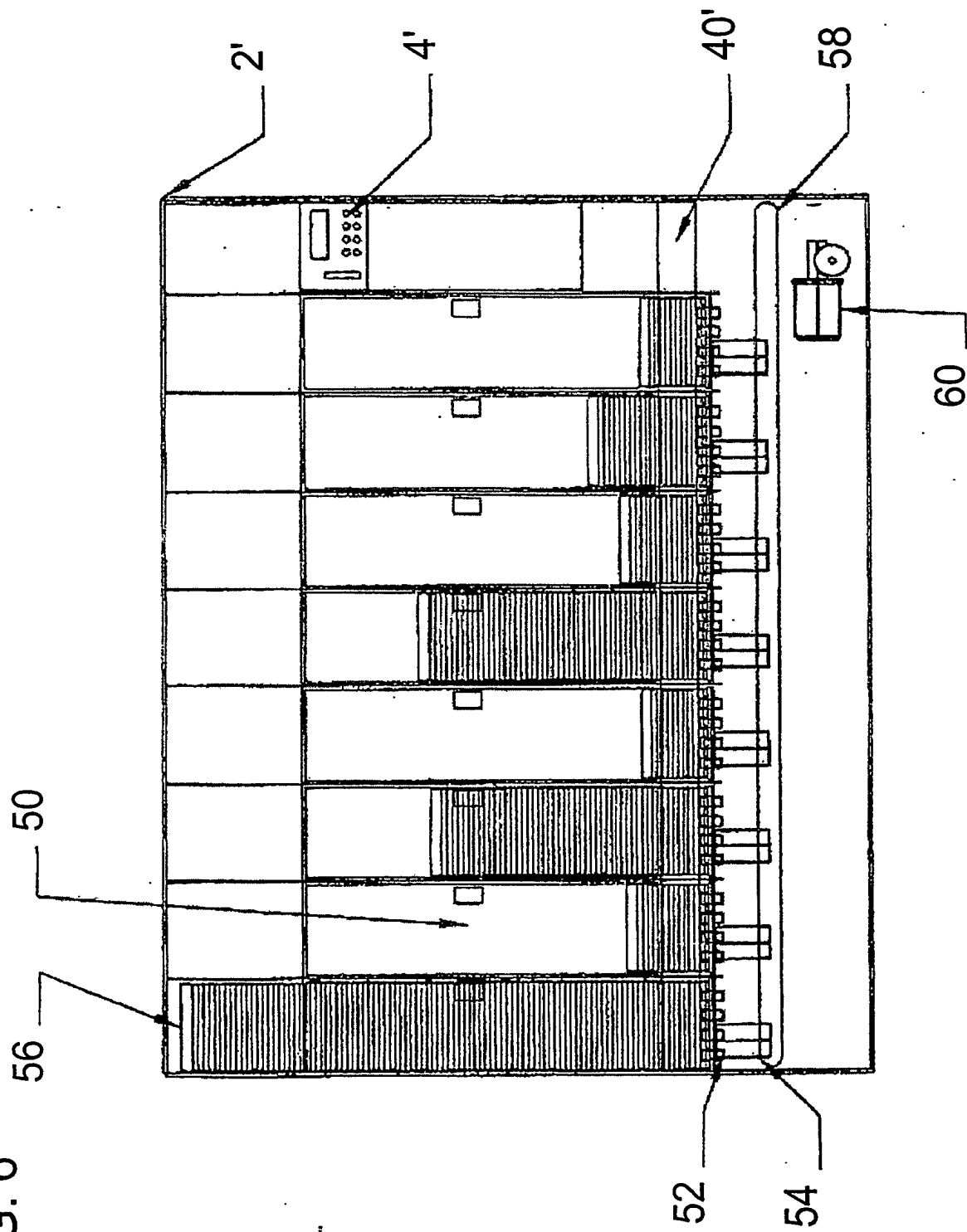


FIG. 7

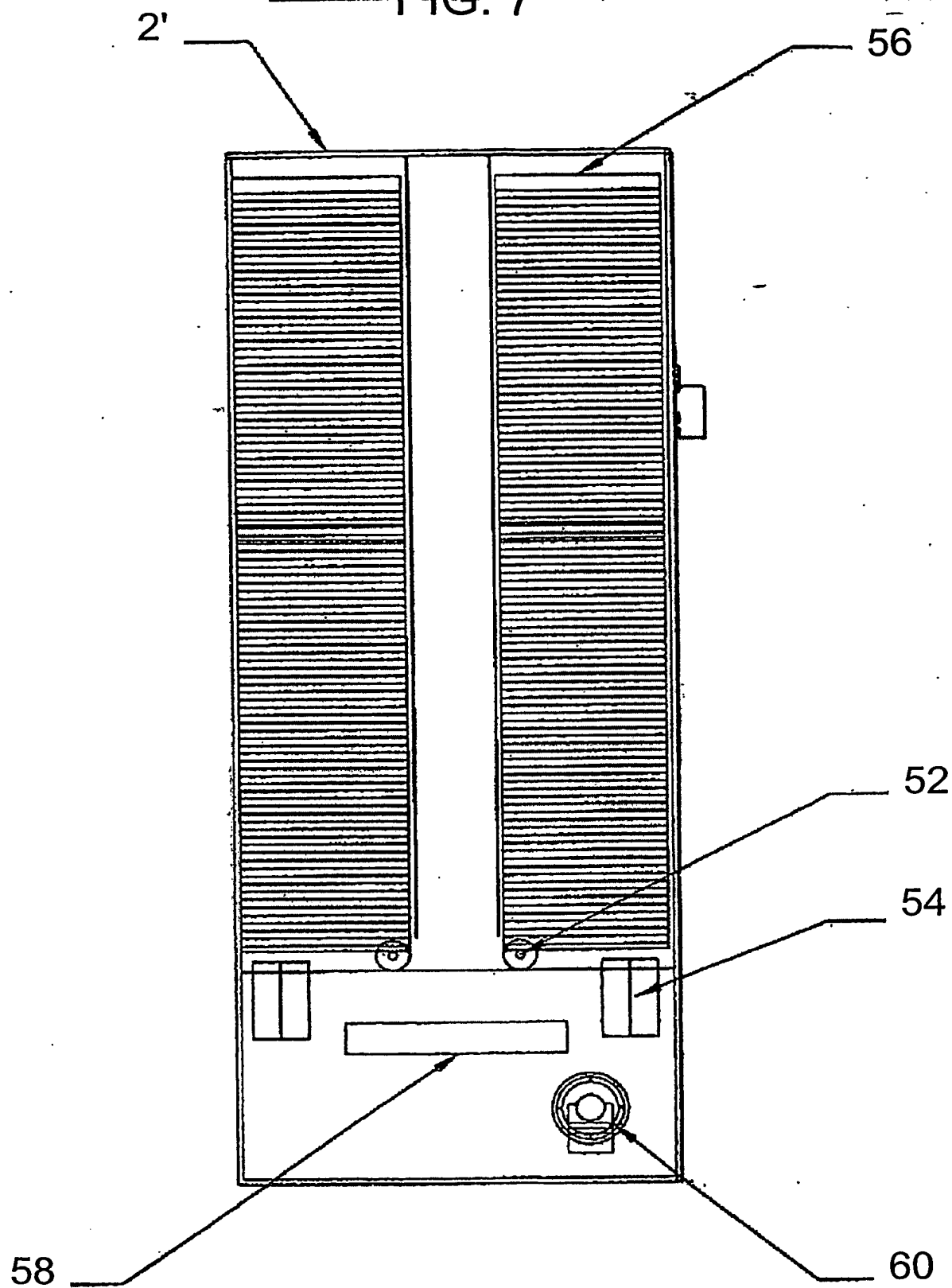
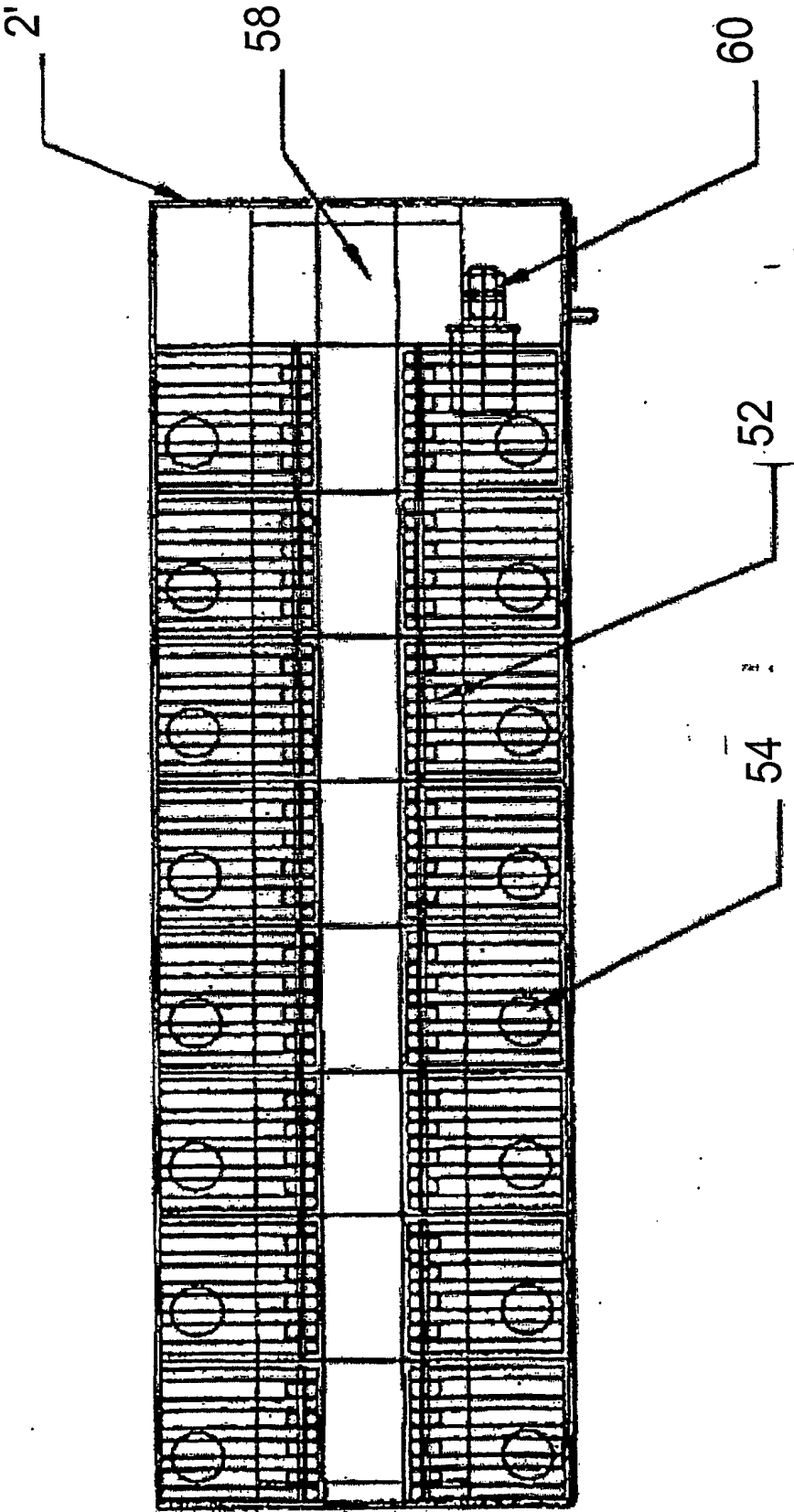


FIG. 8



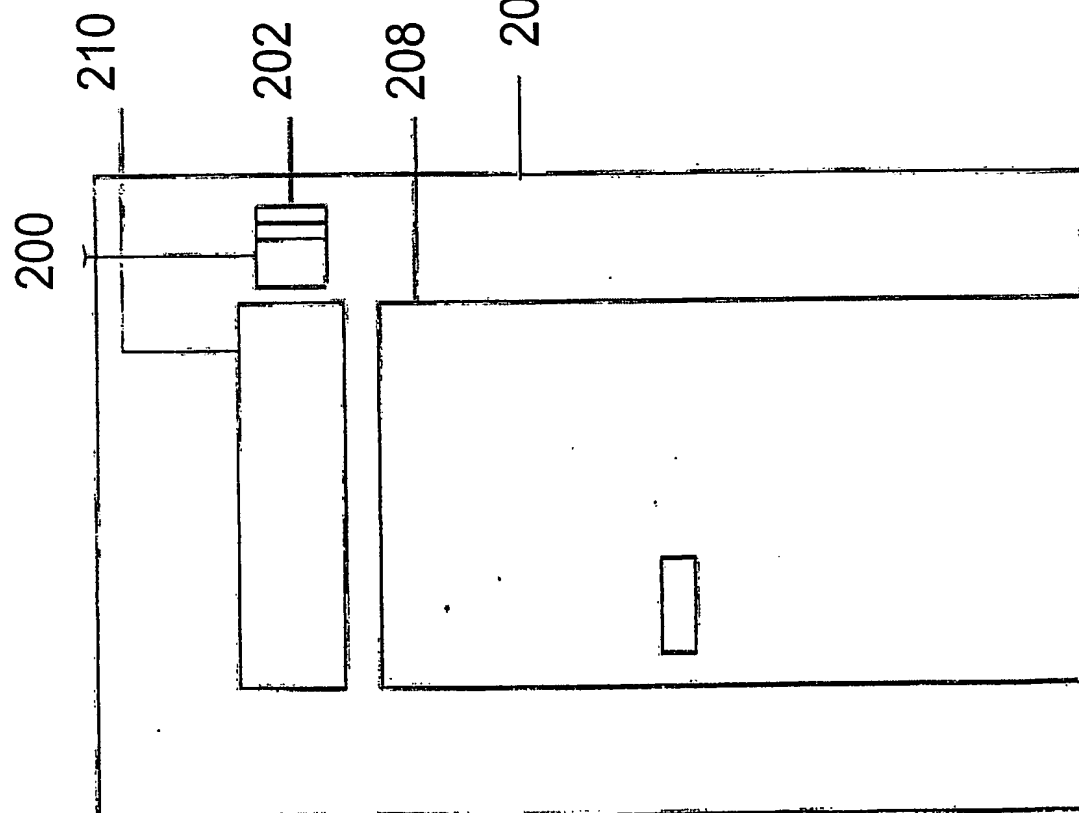


FIG. 9

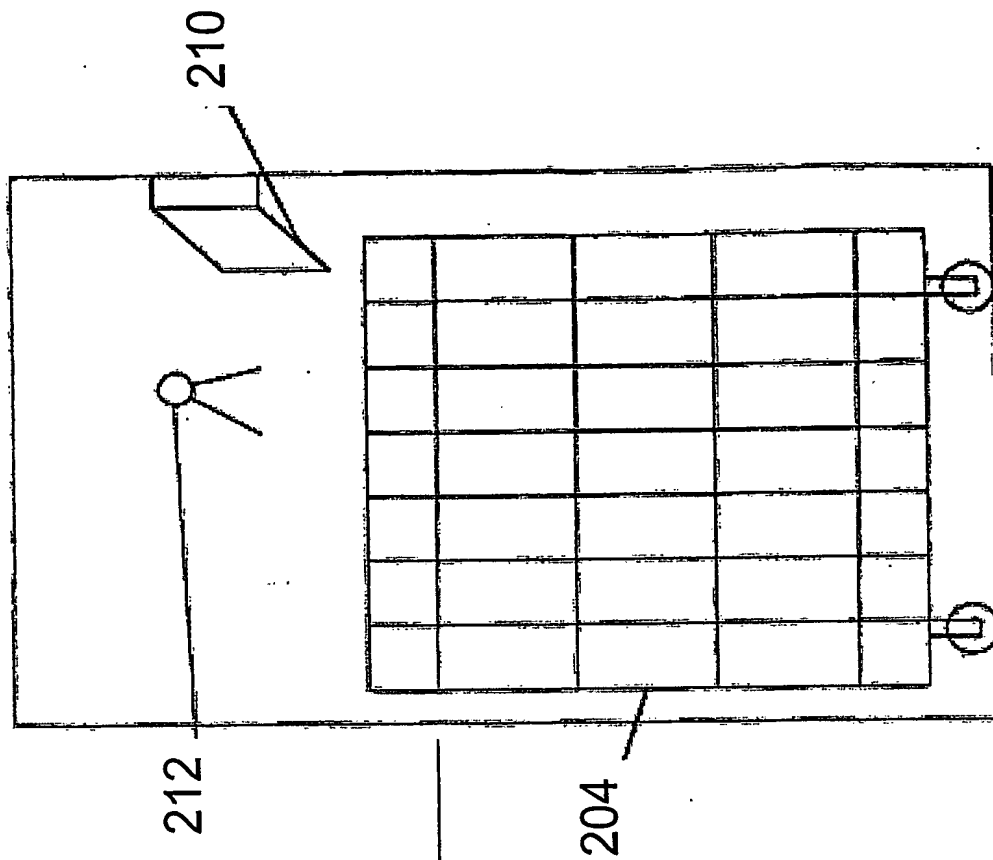


FIG. 10

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